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Synopsis of Robberfly Genera Allied to *Efferia* and *Eicherax*, Including A New Genus

(Diptera : Asilidae)¹

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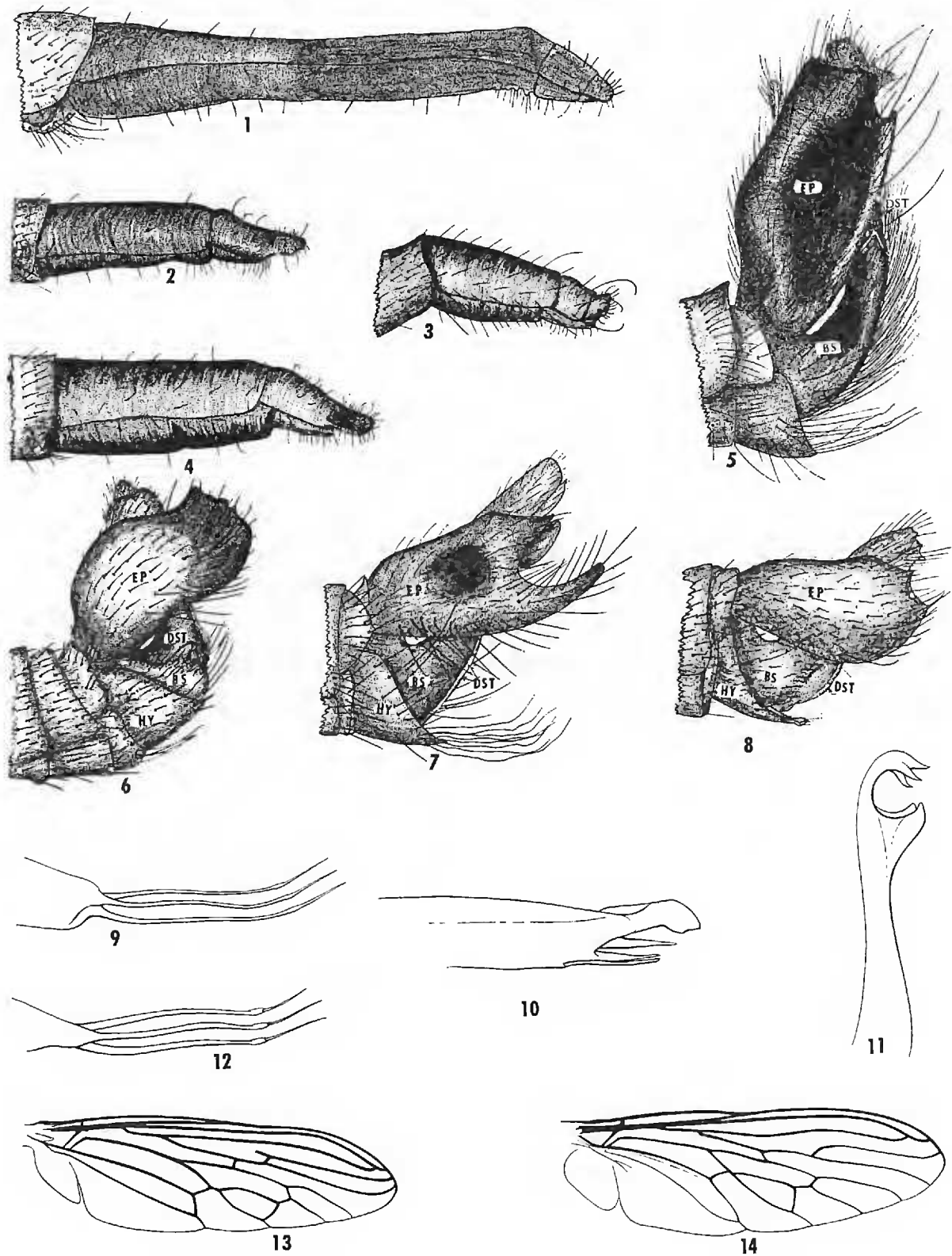
Studies of the species in *Efferia* Coquillett and *Eicherax* Bigot from North and South America show that *Efferia interrupta* (Macquart) and *Eicherax striola* (Fabricius) form a new genus which I am naming *Triorla*. A key, redescription, and discussions of the related genera *Efferia* Coquillett, *Eicherax* Bigot, *Lochmorhynchus* Engel, *Philonerax* Bromley, and *Triorla* Parks are presented here. The female of *Efferia maculata* (Macquart) is a synonym of *Triorla interrupta* (Macquart), and the male is a synonym of *Triorla striola* (Fabricius).

KEY TO THE GENERA ALLIED TO TRIORLA

1. Basistyli expanded distally into lower forcps; female tergite 8 similar to tergite 7 in the amount of pollen and pile *Philonerax* Bromley
Basistyli not expanded distally; female tergite 8 unlike tergite 7 in the amount of pollen and pile 2
2. Hypandrium small, not visible, telescoped out of sight into sternite 8; ovipositor long, segments 9 and 10 compressed laterally 4
Hypandrium well developed, visible; ovipositor short and cylindrical 3
3. Male genitalia and hypandrium projected upward 90°; tergites 9 and 10 of ovipositor not fused together; posterior branch of vein 3 ends behind apex of wing *Eicherax* Bigot
Male genitalia and hypandrium not projected upward; tergites 9 and 10 of ovipositor fused together; posterior branch of vein 3 ends before apex of wing *Triorla*, new genus
4. Male genitalia, excepting the concealed hypandrium, projected upward 90°; posterior half of female abdominal segment 7 pollinose, segment 8 compressed laterally; either two or three submarginal cells, if two, anterior branch of vein 3 angulate with a stump vein *Efferia* Coquillett
Male genitalia and hypandrium not projected upward; posterior half of female abdominal segment 7 shining, segment 8 conical; anterior branch of vein 3 never angulate *Lochmorhynchus* Engel

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² Mr. Parks had nearly completed this paper when his untimely death occurred November 20, 1966. Edited and submitted by Charles H. Martin.



FIGS. 1-4, female genitalia. FIG. 1. *Efferia aestuans*. FIG. 2. *Triorla striola*. FIG. 3. *Eicherax* sp. FIG. 4. *Triorla interrupta*. FIGS. 5-8, male genitalia. FIG. 5. *Efferia aestuans*. FIG. 6. *Eicherax* sp. FIG. 7. *Triorla interrupta*. FIG. 8. *Triorla striola*. FIGS. 9-12, male aedeagi. FIG. 9. *Triorla striola*. FIG. 10. *Eicherax* sp. FIG. 11. *Efferia aestuans*. FIG. 12. *Triorla interrupta*. FIGS. 13-14, wing venation. FIG. 13. *Triorla interrupta*. FIG. 14. *Eicherax* sp. BS—basistylus; DST—dististylus; EP—epandrium; HY—hypandrium.

EFFERIA Coquillett

(Figs. 1, 5, 11)

Efferia Coquillett, 1893: 175. Type-species, *Efferia candidus* Coquillett. Designated by Coquillett, 1910: 536.

Efferia; Martin, 1961: 1-4.

Efferia; Hull, 1962: 475.

Nerax Hull, 1962: 476. Type-species, *Asilus aestuans* Linnaeus, 1763: 413, by original designation.

Efferia; Martin, 1965b: 126; Martin & Wilcox, 1965, p. 393; Wilcox, 1966.

Erax; authors, not Scopoli.

Past taxonomists recognized *Erax* Scopoli as unavailable for the Nearctic and Neotropical species assigned to it, but they continued to use the erroneous name rather than finding a valid name. In 1961, Martin reviewed the misuse of *Erax* Scopoli and found that *Efferia* Coquillett was the first name available for these species. Hull (1962) restricted *Efferia* to the species with three submarginal cells in the wings and erected *Nerax* for those with two submarginals. Williston (1901) and Hine (1919) did not consider the number of submarginal cells to be a generic character. James (1941) found three submarginal cells occurring in species with two submarginals. Martin (1965b) found that two or three submarginal cells were not associated with other characters of the *Efferia*. Martin & Wilcox (1965), and Wilcox (1966) in revising the 100 species in the United States, considered *Nerax* Hull a synonym of *Efferia* Coquillett.

REDESCRIPTION.—Length 7-40 mm; face gibbous, frons deeply recessed; ocellar bristles prominent; antennal style without microsegment; with either two or three submarginal cells in wing, if two submarginals, anterior branch of vein 3 angulate and usually with a stump vein; basistyli with dististyli attached to it basally, epandria, and aedeagus project upward 90° from longitudinal axis of the body (Fig. 5), hypandrium small and telescoped out of sight into sternite 8, apex of aedeagus a hook bent ventrad with three short apical tubes; ovipositor shining, segment 8 ten to thirty times longer than segment 10 (cerci?), segment 9 short and separated from other segments, segment 10 without spines; ovipositor longer than abdominal segments 6 and 7 together, tergite 7 pollinose.

DISCUSSION.—Some of the characters of *Efferia* are most variable. Color and length varies from the pale *Efferia wilcoxi* (Bromley), 7 mm long, up to the black *Efferia grandis* (Hine), 35 mm long. One of the features identifying those *Efferia* with two submarginal cells is the stump vein on the angulated anterior branch of vein 3 as in *Triorla* (Fig. 13). The length of this vein varies from the short thickened stump as in *Efferia caliente* Wilcox, to one equal to the length of the discal crossvein as in *Efferia coquilletti* (Hine). The stump may be extremely long and directed anteriorad to vein 2, forming a third

submarginal cell as in *Efferia anomala* (Bellardi), or the stump may be directed posteriad to vein 3 forming a third submarginal as in *Efferia titan* (Bromley) and *E. albibarbis* (Macquart). The unstable nature of this vein is demonstrated in specimens of the Anomala Group which have a variable number of submarginal cells from one wing to the other.

The posterior branch of vein 3 ends before the apex of the wing in all groups except the Aestuans Group where it ends behind the apex of the wing. The point on the margin where the posterior branch of vein 3 ends is apparently a stable character.

The aedeagus of *Efferia* is unique in comparison with *Eicherax* and other Asilinae because it stands upright with the apex curved ventrad to form a hook ending in three short apical tubes (Fig. 11). In some species a pair of lamellate processes on the base of the aedeagus cover the tubes from a lateral view, while in other species the processes are more basad. This type of aedeagus is common to species both with two and three submarginal cells.

In some species, as in *Efferia tuberculata* (Coquillett), sternite 8 is produced posteriad so that superficially it may resemble a hypandrium.

The ovipositor of the species of *Efferia* both with two and three submarginal cells is long and laterally compressed posteriad from the middle of segment 8 (Fig. 1). Segment 7 is pollinose in *Efferia*, while in *Philonerax* it is shining, forming a part of the ovipositor. All the other closely related genera have cylindrical or subcylindrical ovipositors. A suture is present between segments 8, 9, and 10, on the ovipositor of *Efferia*.

DISTRIBUTION.—Western Hemisphere; Solomon Islands; northern China.

EICHERAX Bigot

(Figs. 3, 6, 10, 14)

Eicherax Bigot, 1857: 545. Type-species, *Erax simplex* Macquart, by original designation.

Eristicus Loew, 1848: 396. Type-species, *Erax (Eristicus) nigripes* Bellardi, by monotypy, see Martin, 1961: 3. Preoccupied in Hymenoptera.

Neoristicus Osten Sacken, 1878: 81, 235 (change of name).

Loew proposed the genus *Eristicus* in 1848 without assigning any species to it. Bellardi (1861) assigned his *nigripes* to the genus *Erax*, subgenus *Eristicus*, which then became the type species of *Eristicus* by monotypy. Osten Sacken (1878) proposed the name *Neoristicus* for *Eristicus* Loew which was preoccupied by *Eristicus* Wesmel in Hy-

menoptera. Coquillett (1910) found *Neoeristicus* Osten Sacken to be a synonym of *Eicherax* Bigot.

REDESCRIPTION.—Length 13–17 mm; ocellar tubercle with fine setae; antennal style with microsegment; anterior branch of vein 3 strongly angulated, without a stump vein, posterior branch ending behind apex of the wing; male genitalia including hypandrium projected 90° upward from longitudinal axis of the body (Fig. 6), aedeagus apically with three short straight tubes (Fig. 10), surmounted by a mesal lamella, or rounded protuberance, aedeagal tubes as long as antennal segment 2; ovipositor short, conical, not exceeding length of abdominal segments 6 and 7. Female tergite 7 pollinose, tergite 8 shining, tergites 9 and 10 usually with suture between them.

DISCUSSION.—The species in *Eicherax* are more uniform in size than in *Efferia*, averaging about 15 mm in length. *Eicherax* is usually dark colored, with light markings on the lateral margins of the abdominal segments. *Eicherax* have only ocellar setae and not the heavy bristles as found in *Efferia*. The entire genitalia, including the well developed hypandrium, are projected upward 90°, the upward projection beginning with segment 8 (Fig. 6). The apex of the aedeagus of *Eicherax* is not curved into a hook, but has three short straight tubes (Fig. 10).

DISTRIBUTION.—Mexico; Neotropical.

PHILONERAX Bromley

Philonerax Bromley, 1932: 270. Type-species, *Asilus muscidus* Walker, 1837: 340–341, by original designation. Monotypic.

REDESCRIPTION.—Length 15–22 mm; ocellar bristles prominent; antennal style without microsegment; anterior branch of vein 3 not angulate, posterior branch ending before apex of wing; basistyli elongate, forming clavate lower forceps, hypandrium small, telescoping into sternite 8; ovipositor long and compressed laterally, segment 8 similar to segment 7 in amount of pollen and pile, female segments 9 and 10 broad, short, forming a rounded club-like structure.

DISCUSSION.—The clavate lower forceps formed by the posterior extension of the basistyli immediately sets this species apart from the males of the other closely related genera.

DISTRIBUTION.—Neotropical.

Triorla Parks, new genus

(Figs. 2, 4, 7, 8, 9, 12, 13)

TYPE-SPECIES.—*Asilus interruptus* Macquart, 1834: 310.

The genus *Triorla* has three long apical aedeagal tubes which separate it from *Efferia* Coquillett with a hook-shaped aedeagus, and from *Eicherax* Bigot whose aedeagus has three short apical tubes.

Ocellar tubercle with weak bristles or hairs; antennal style without microsegment; anterior branch of vein 3 angulate, with spur vein as long or longer than

discal crossvein, posterior branch ending before wing apex (Fig. 13); male genitalia and hypandrium parallel with longitudinal axis of the body, hypandrium well developed, apex of aedeagus with three slender tubes as long as length of antennal segment 3 and style together, expanding bead-like near apex and suddenly constricting to tubes very small in diameter (Figs. 9, 12); ovipositor not longer than abdominal segments 6 and 7, tergite 7 pollinose except for shining posterior margin, segment 8 shining, ovipositor conical, not compressed laterally, tergites 9 and 10 coalesced, tergite 10 without apical spines (Figs. 2, 4).

DISCUSSION.—The length of the species of *Triorla* varies from 18–30 mm. The stump vein on the anterior branch of vein 3 is more stable in this genus than in *Efferia*. I have examined a single abnormal specimen of *T. interrupta* which had on one wing a third submarginal cell formed by the union of the stump vein with the posterior branch of vein 3. Vein 3 always ends before the apex of the wing.

DISTRIBUTION.—Nearctic, south of the 41st parallel, Mexico, and Neotropical to Brazil.

TRIORLA INTERRUPTA (Macquart), (new combination)

(Figs. 4, 7, 12, 13)

Asilus interruptus Macquart, 1834: 310. Type locality: Georgia.

Erax interruptus; Hine, 1919: 153, (Synonyms: *Efferia maculatus* Macquart, *E. lateralis* Macquart; *E. ambiguus* Macquart, and *E. villosus* Bellardi).

Nerax interruptus; Hull, 1962: 478.

Erax interruptus; Martin, 1961: 1–4; Martin, 1965a: 28, (Status change); Martin, 1965b: 126, 128 (Synonyms: *perrumpeus* Walker, *concolor* Walker, and *villosus* Bellardi); Martin and Wilcox, 1965: 394; Wilcox, 1966: 205, 206.

Erax maculatus Macquart, 1838: 227. Type-locality: Guadeloupe; Osten Sacken, 1887: 200 (Synonyms: *ambiguus* Macquart, *interruptus* Macquart, *lateralis* and *villosus* Bellardi).

Efferia maculata; Martin, 1965b: 128–129 (Status change, observations on type material of Macquart).

Erax lateralis Macquart, 1838: 232. Type locality: Philadelphia, Pennsylvania.

Erax ambiguus Macquart, 1846: 212. Type locality: Galveston, Texas.

Erax concolor Walker, 1851: 130. *Patria ignota*.

Nerax concolor; Hull, 1962: 479.

Asilus perrumpeus Walker, 1860: 283. Type locality: Mexico.

Erax (Eristicus) villosus Bellardi, 1861: 49. Type locality: Mexico.

Eicherax villosus; Hull, 1962: 475.

Wilcox (1966) has redescribed *Triorla interrupta* (Macquart). Malloch (1917) gave its life history and figured the immature stages. *Triorla interrupta* is separated easily from *T. striola* (Fabricius) by the posterior margin of the epandria being deeply emarginated, and the base of the left aedeagal tube is heavier than in *T. striola*. Abdominal segments 6 and 7 of *T. interrupta* of the female are each marked by a dorsal median black median stripe.

Macquart (1838) under the name *Erax maculatus* clearly described and illustrated (pl. 9, fig. 6) a female of *T. interrupta*. Martin (1965b) reported on the two remaining females and five males of the original 10 syntypes; one female was covered with mold and the other is a female belonging to the Aestuans Group. He could not associate the type material with Macquart's description and illustrations. On the basis of Macquart's description and illustration being identical with his earlier description of *Asilus interruptus*, there is no doubt that *Erax maculatus* is a synonym of *Triorla interrupta* on the basis of the females. The males Macquart described as *Erax maculatus* are a synonym of *Triorla striola* (Fabricius). Hine (1919) listed *E. maculatus* as a synonym of *E. interrupta*.

TRIORLA STRIOLA (Fabricius), (new combination)
(Figs. 2, 8, 9)

Dasyogon striola Fabricius, 1805: 172. Type locality: Brazil.

Asilus striola; Wiedemann, 1821: 199.

Asilus (Eristicus) striola; Burmeister, 1861: 171.

Erax striola; Schiner, 1866: 686.

Efferia striola; Martin, 1961: 1-4 (New combination).

Nerax striola; Hull, 1962: 479.

Eicherax striola; Carrera & Machado-Allison, 1963: 254 (Change based on a single female specimen).

Erax maculatus Macquart, 1838: 227. Type locality: Guadeloupe; Osten Sacken, 1887: 200 (Synonyms: *lateralis* Macquart; *ambiguus* Macquart; *villosus* Bellardi, and *interruptus* Macquart).

The males of *Triorla striola* (Fabricius) have a shallow emargination on the posterior margin of the epandria, there is a small triangular posteriorad projection of the hypandrium. Tergite 6 of the female bears a dorsal median black spot, tergite 7 is entirely black.

Macquart (1838) did not describe, but only figured the male terminalia (pl. 9, fig. 6b) of *Erax maculatus*. Martin (1965b) observed that Macquart's figure does not resemble the male specimens in the syntype series. I have not been able to associate Macquart's figures with any known species. Martin's notes and his photographic slides of this type series indicate that the males of the type series are actually males of *Triorla striola*. On this basis the males of *Erax maculatus* Macquart are synonymized with the males of *Triorla striola*.

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New Mexican *Acronyches* and *Parataracticus*

(Diptera: Asilidae)¹

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Genus *ACRONYCHES* Williston

Acronyches Williston, S. W. 1908. *Manual of North American Diptera*, p. 388, fig. 103. Hermann, F. 1921. *Arch. Naturgesch.*, Abt. A, 86: 118-122.

TYPE OF GENUS.—*Acronyches willistoni* Hermann, 1921.

The position and status of the rare genus *Acronyches* Williston (Dasyopogoninae: Asilidae) has been puzzling ever since its description because of its close but superficial resemblance to Leptogastrinae. Williston (1908) erected the genus only on the figure of an undescribed Brazilian asilid, stating that the genus represented a transition between the Dasyopogoninae and Leptogastrinae. The types of *Acronyches willistoni* Hermann and of *A. imitator* Hermann, both females, were seen by me at the Zoologische Sammlung des Bayrischen Staates, Munich. *A. fenestralus* Hermann was not located. The three species are from Paraguay. Hermann misidentified a specimen of *Acronyches* from Costa Rica at the Naturhistorisches Museum, Vienna, as a cotype of *A. willistoni*. Also, Hermann mislabeled a manuscript species of

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